

Assignment Sheet / Density Test

Project Number: 23502-ZS9Lab. Tech: K. FordProject Name: HSRDate Completed: 11/26/13Date Drilled: 10/28/13Boring: \$0065R

Sample	Depth	Tests	Soil Wt	Length	Diameter	Wet Wt	Dry Wt	Wet	Moisture	Dry	Soil
			Gms	in	in	Gms	Gms	Density	%	Density	Classification
D04	0.5!	CHBV/ BV/									
B01	0-5'	CURV,RV	700.0	F 07	0.40	400	404.7	440.4	0.40/	404.4	SM
MC02-1	6-6.5'	DD,DS	782.0	5.87	2.42	133	121.7	110.4	9.1%	101.1	SM
SS03	11-11.5'	SA	050.0	2.00	0.40	200	182.2	440.0	9.8%	100.1	SP
MC04-1	16-16.5'	DD,DS	858.6	6.00	2.42	134	122.5	118.6	9.6%	108.1	SM
SS05	21-21.5'	SA				200	176.5		13.3%		SP
MC06-2	25.5-26'	DD,SA	936.6	5.90	2.42	200	173.4	131.5	15.3%	114.0	SM
MC11-2	45.5-46'	PI									ML
SS12	51-51.5'	DD,HY,SA				40	34.0		17.6%		SM/ML
MC13-2	55.5-56'	DD,SA	933.3	5.95	2.42	200	167.8	130.0	19.2%	109.0	SP
MC17-2	75.5-76'	DD,PI	919.3	6.00	2.42	200	164.2	126.9	21.8%	104.2	SM
SS18	81-81.5'	HY,SA									ML
0		·									
0											
Ŭ											
			+ +								
			+ +								
			+ +								

Notes:

CHEM Sulfate/Chloride MR Minimum Resistivity

COLL Collapse PH pH Test
CONSOL 1D Consolidation PI Atterberg Limits
CURV Modified Proctor RV R-value

DD Moisture Density RVT R-value Treated
DS Direct Shear SA Sieve Analysis
HY Hydrometer TRX Triaxial Compression



Assignment Sheet / Density Test

Project Number : 23502-ZS9 Lab. Tech : K. Ford Project Name : HSR Date Completed : 1/20/14

Date Drilled : 1/8/14

Boring	Sample	Depth	Tests	Soil Wt	Length	Diameter	Wet Wt	Dry Wt	Wet	Moisture	Dry	Soil
				Gms	in	in	Gms	Gms	Density	%	Density	Classification
20010AP	MC03-2	15.5-16'	SA				200	174.1		14.9%		SP
S0019AR	SS06	30-31.5'	SA				200	181.5		10.2%		SM/SP
S0019AR S0020R	SS07	25-26.5'	SA				200	167.7		19.3%		SM
S0020R	MC10-1	46-46.5'	SA			+	200	180.2		11.0%		SM/ML
S0021R	MC18-1	86-86.5'	SA				200	184.8		8.2%		SP
S0021R	SS07	30-31.5'	SA				200	171.3		16.8%		SM/SP
S0029R	MC08-1	30.9-31.4	SA				200	174.1		14.9%		SM
S0031R	MC03-2	10.4-11	SA				200	166.5		20.1%		SP
S0031R	SS08	35-36.5'	SA				200	175.4		14.0%		SM
S0034BR	MC09-1	41-41.5'	HY.SA									SM/ML
S0065R	MC04-2	15.5-16'	SA				200	172.6		15.9%		SM/SP
S0066R	MC03-2	10-11.5'	SA				200	172.0		16.3%		SM
S0067R	MC06-1	25-26.5'	SA				200	169.4		18.1%		SP
S0067R	MC11-1	45-46.5'	HY,SA									SM
S0067R	MC23-1	95-96.4'	HY,SA									SM
S0070R	MC09-2	40.5-41'	HY,SA									SM
S0070R	U05	20-22'	HY,SA									SM
S0072R	MC12-1	51-51.5'	HY,SA									SM
S0073R	MC11-2	45.5-16'	HY,SA									ML/CL
			,									

Notes:

HY

CHEM Sulfate/Chloride MR Minimum Resistivity Collapse РΗ COLL pH Test CONSOL 1D Consolidation Ы Atterberg Limits CURV Modified Proctor RV R-value DD Moisture Density RVT R-value Treated DS Direct Shear SA Sieve Analysis

TRX

Hydrometer

Triaxial Compression



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Sieve Analysis for Soil / Fine Aggregate ASTM C-136

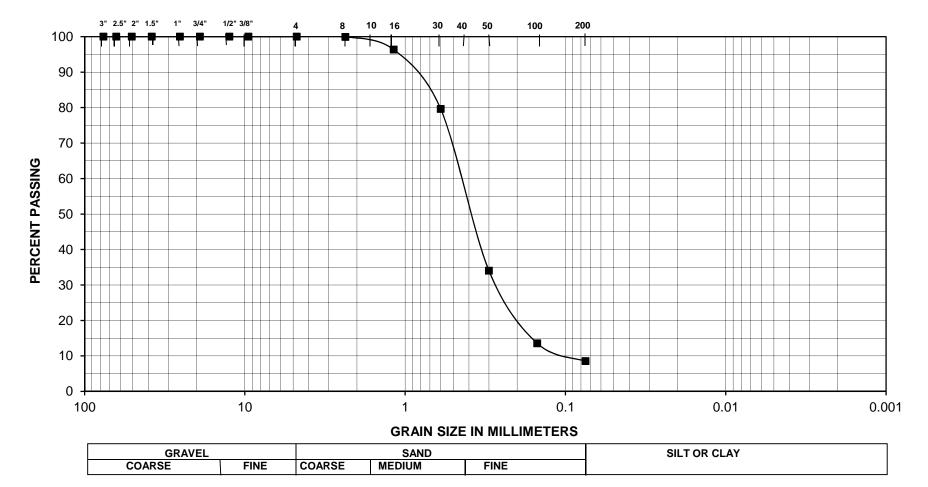
Duningt	CALICD		Taabaisisas	I/ Fand			
Project:	CA HSR		_Technician:	K. Ford			
			Date:	11/25/2013			
TES#:	23502-ZS9		Sample No.:	SS03			
Boring #:	S0065R; 11-11.5		Classification:	(SP) Fine Sand			
		Weight	Maximum	Minimum Weight of			
		(lbs. or grams)	Sieve Size	Test Specimen, lbs. (kg)			
Total Dry S	Sample + Tare Wt.		Sand	1.0 (0.5)			
Tare Weig	ht		3/8"	2.0 (1.0)			
Total Dry S	Sample Wt.	182.2	1/2"	4.0 (2.0)			
Initial Weig	ght Fine		3/4"	11.0 (5.0)			
Aggregate	Before Wash	182.2	1"	22.0 (10.0)			
Final Weig	ht Fine		1 1/2"	33.0 (15.0)			
Aggregate	After Wash	167.6	2"	44.0 (20.0)			

	Cumulative	Individual	Cumulative	Cumulative	
Sieve	Weight	Weights	%	%	
Size	Retained	Retained	Retained	Passing	Specs.
3 in.			0.0	100.0	
2 1/2 in.			0.0	100.0	
2 in.			0.0	100.0	
1 1/2 in.			0.0	100.0	
1 in.			0.0	100.0	
3/4 in.			0.0	100.0	
1/2 in.			0.0	100.0	
3/8 in.			0.0	100.0	
#4	0.0	0.0	0.0	100.0	
#8	0.1	0.1	0.1	99.9	
#16	6.7	6.6	3.6	96.4	
#30	37.1	30.5	20.4	79.6	
#50	120.2	83.1	66.0	34.0	
#100	157.5	37.3	86.4	13.6	
#200	166.6	9.1	91.4	8.6	
Pan	167.6				



U.S. STANDARD SIEVE OPENING IN INCHES

U.S. STANDARD SIEVE NUMBERS



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Sample #	Classification	% Gravel	% Sand	% Silt	% Clay	% Moist.	LL	PL	PI	Project:	CA HSR
SS03	(SP) Fine Sand	0	91.4	8.6							
										TES#:	23502-ZS9
										Boring #	S0065R; 11-11.5'
										Date:	11/25/2013



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Sieve Analysis for Soil / Fine Aggregate ASTM C-136

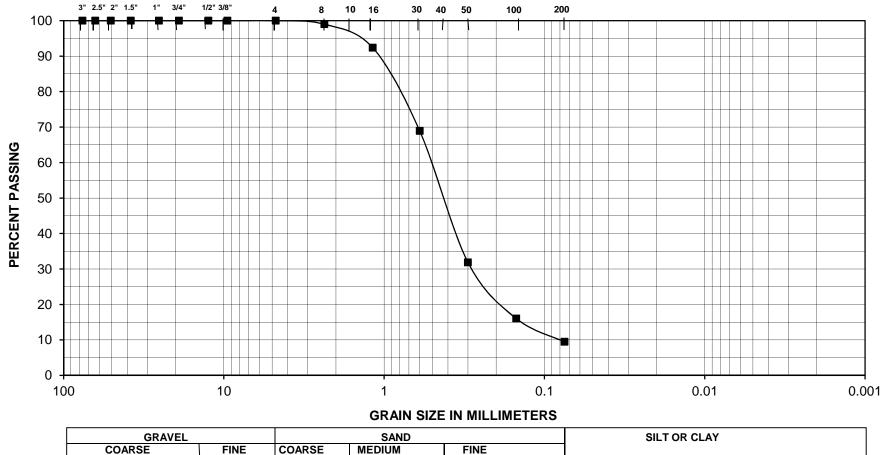
502-ZS9 065R; 15.5-16'	Weight	Date: Sample No.: Classification: Maximum	1/16/2014 MC04-2 (SM/SP) Fine-Med Silty Sand Minimum Weight of
	Weight	Classification:	(SM/SP) Fine-Med Silty Sand
065R; 15.5-16'	Weight	_	
	•	Maximum	Minimum Weight of
	•	Maximum	Minimum Weight of
	(11		
	(lbs. or grams)	Sieve Size	Test Specimen, lbs. (kg)
ole + Tare Wt.		Sand	1.0 (0.5)
		3/8"	2.0 (1.0)
ole Wt.	172.6	1/2"	4.0 (2.0)
ine		3/4"	11.0 (5.0)
ore Wash	172.6	1"	22.0 (10.0)
ne		1 1/2"	33.0 (15.0)
r Wash	158	2"	44.0 (20.0)
ir r	le Wt. ne re Wash ne	le + Tare Wt. le Wt. 172.6 ne re Wash 172.6 ne Wash 158	le + Tare Wt. Sand 3/8" le Wt. 172.6 1/2" ne 3/4" re Wash 172.6 1" ne 1 1/2" Wash 158 2"

	Cumulative	Individual	Cumulative	Cumulative	
Sieve	Weight	Weights	%	%	
Size	Retained	Retained	Retained	Passing	Specs.
3 in.			0.0	100.0	
2 1/2 in.			0.0	100.0	
2 in.			0.0	100.0	
1 1/2 in.			0.0	100.0	
1 in.			0.0	100.0	
3/4 in.			0.0	100.0	
1/2 in.			0.0	100.0	
3/8 in.			0.0	100.0	
#4	0.0	0.0	0.0	100.0	
#8	1.7	1.7	1.0	99.0	
#16	13.1	11.4	7.6	92.4	
#30	53.6	40.5	31.1	68.9	
#50	117.6	64.0	68.1	31.9	
#100	144.9	27.3	84.0	16.0	
#200	156.2	11.3	90.5	9.5	
Pan	158				



U.S. STANDARD SIEVE OPENING IN INCHES

U.S. STANDARD SIEVE NUMBERS



—**■** MC04-2

Sample #	Classification	% Gravel	% Sand	% Silt	% Clay	% Moist.	LL	PL	PI	Project:	CA HSR
MC04-2	(SM/SP) Fine-Med Silty Sand	0	90.5	9.5							
										TES#:	23502-ZS9
										Boring #	S0065R; 15.5-16'
										Date:	1/16/2014



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Sieve Analysis for Soil / Fine Aggregate ASTM C-136

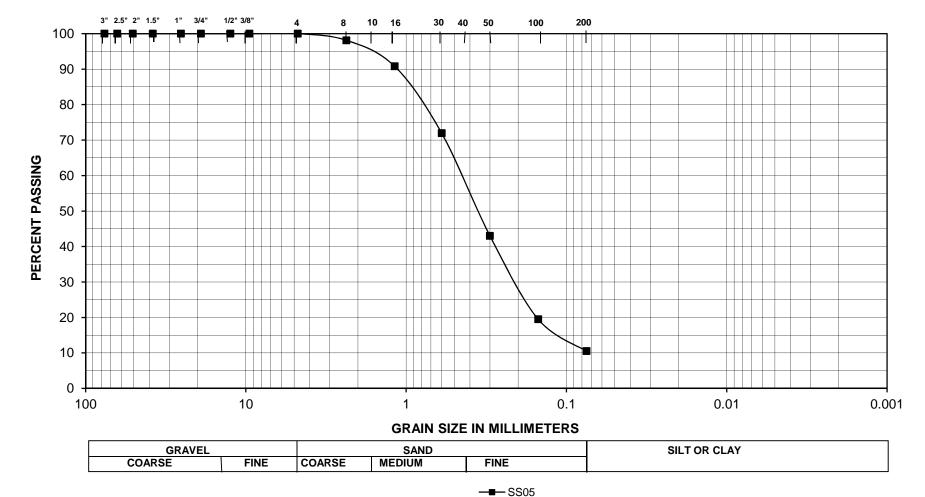
Project:	CA HSR		Technician:	K. Ford			
-			Date:	11/25/2013			
TES#:	23502-ZS9		Sample No.:	SS05			
Boring #:	S0065R; 21-21.5'		Classification:	(SP) Fine Sand			
			_				
		Weight	Maximum	Minimum W	eight of		
		(lbs. or grams)	Sieve Size	Test Specime	n, lbs. (kg)		
Total Dry S	Sample + Tare Wt.		Sand	1.0 (0	.5)		
Tare Weig	ht		3/8"	2.0 (1	.0)		
Total Dry S	Sample Wt.	176.5	1/2"	4.0 (2.0)			
Initial Weig	ht Fine		3/4"	11.0 (5	5.0)		
Aggregate	Before Wash	176.5	1"	22.0 (1	0.0)		
Final Weig	ht Fine		1 1/2"	33.0 (1	5.0)		
Aggregate	After Wash	158.3	2"	44.0 (20.0)			
				-			
	Cumulative	Individual	Cumulative	Cumulative			

	Cumulative	Individual	Cumulative	Cumulative	
Sieve	Weight	Weights	%	%	
Size	Retained	Retained	Retained	Passing	Specs.
3 in.			0.0	100.0	
2 1/2 in.			0.0	100.0	
2 in.			0.0	100.0	
1 1/2 in.			0.0	100.0	
1 in.			0.0	100.0	
3/4 in.			0.0	100.0	
1/2 in.			0.0	100.0	
3/8 in.			0.0	100.0	
#4	0.0	0.0	0.0	100.0	
#8	3.3	3.3	1.9	98.1	
#16	16.2	12.9	9.2	90.8	
#30	49.5	33.3	28.0	72.0	
#50	100.6	51.1	57.0	43.0	
#100	142.1	41.5	80.5	19.5	
#200	157.9	15.8	89.5	10.5	
Pan	158.3				



U.S. STANDARD SIEVE OPENING IN INCHES

U.S. STANDARD SIEVE NUMBERS



Sample #	Classification	% Gravel	% Sand	% Silt	% Clay	% Moist.	LL	PL	PI	Project:	CA HSR
SS05	(SP) Fine Sand	0	89.5	10.5							
										TES#:	23502-ZS9
										Boring #	S0065R; 21-21.5'
										Date:	11/25/2013



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Sieve Analysis for Soil / Fine Aggregate ASTM C-136

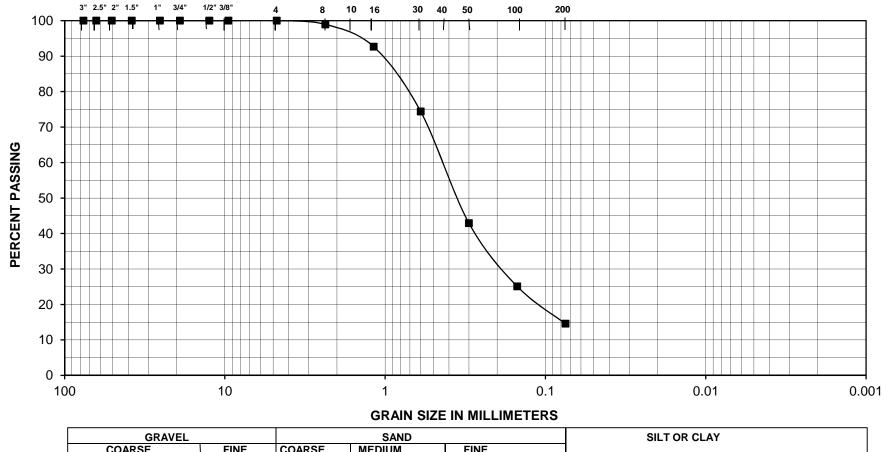
Project:	CA HSR		Technician:	K. Ford			
			Date:	11/25/2013			
TES#:	23502-ZS9		Sample No.:	MC06-2			
Boring #:	S0065R; 25.5-26		Classification:	(SP) Fine Sand			
		Weight	Maximum	Minimum W	/eight of		
		(lbs. or grams)	Sieve Size	Test Specimen, lbs. (kg			
Total Dry S	ample + Tare Wt.		Sand	1.0 (0	.5)		
Tare Weigl	nt		3/8"	2.0 (1	.0)		
Total Dry S	ample Wt.	173.4	1/2"	4.0 (2.0)			
Initial Weig	ht Fine		3/4"	11.0 (5	5.0)		
Aggregate	Before Wash	173.4	1"	22.0 (1	0.0)		
Final Weig	ht Fine		1 1/2"	33.0 (1	5.0)		
Aggregate	After Wash	149.6	2"	44.0 (2	0.0)		
<u> </u>							
	Cumulative	Individual	Cumulative	Cumulative			
Sieve	Weight	Weights	%	%			
Size	Retained	Retained	Retained	Passing	Specs.		
3 in.			0.0	100.0			
2 1/2 in			0.0	100.0			

Sieve	Weight	Weights	%	%	
Size	Retained	Retained	Retained	Passing	Specs.
3 in.			0.0	100.0	
2 1/2 in.			0.0	100.0	
2 in.			0.0	100.0	
1 1/2 in.			0.0	100.0	
1 in.			0.0	100.0	
3/4 in.			0.0	100.0	
1/2 in.			0.0	100.0	
3/8 in.			0.0	100.0	
#4	0.0	0.0	0.0	100.0	
#8	1.8	1.8	1.1	98.9	
#16	12.7	10.9	7.3	92.7	
#30	44.4	31.7	25.6	74.4	
#50	99.0	54.6	57.1	42.9	
#100	129.9	30.9	74.9	25.1	
#200	148.1	18.2	85.4	14.6	
Pan	149.6				



U.S. STANDARD SIEVE OPENING IN INCHES

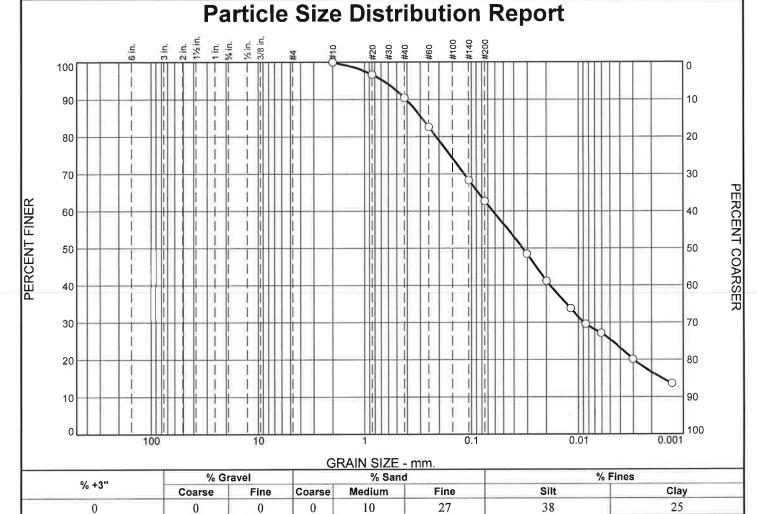
U.S. STANDARD SIEVE NUMBERS



GRAVEL		SAND			SILT OR CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	

—**■**— MC06-2

Sample #	Classification	% Gravel	% Sand	% Silt	% Clay	% Moist.	LL	PL	PI	Project:	CA HSR
MC06-2	(SP) Fine Sand	0	85.4	14.6							
										TES#:	23502-ZS9
										Boring #	S0065R; 25.5-26'
										Date:	11/25/2013



SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
#10	100		
#20	97		
#40	90		
#60	83		
#140	68		
#200	63		
0.0305 mm.	49		
0.0199 mm.	41		
0.0119 mm.	34		
0.0085 mm.	30		
0.0061 mm.	27		
0.0030 mm.	20		
0.0013 mm.	14		

10	2.1	50	23									
		Soil Description										
	Olive gray sandy lean clay											
	Office gray sailty leaft clay											
		Atterberg Limits										
	PL= 13	LL= 32	PI= 19									
		Castialanta										
	Da = 0.4107	Coefficients	Daa= 0.0630									
	D ₉₀ = 0.4107 D ₅₀ = 0.0333	D ₈₅ = 0.2909 D ₃₀ = 0.0089	D ₄ 5= 0.0030									
	D ₁₀ =	C.,=	D ₆₀ = 0.0630 D ₁₅ = 0.0016 C _c =									
	210	o _u										
		Classification										
	USCS= CL	AASHTO=	A-6(9)									
		Remarks										
	F.M.=0.48	Itemarks										
	1.1010.40											

(no specification provided)

Source of Sample: S0065R G-52770 Sample Number: U10

Depth: 42-44.5

Date: 11/14/13



Client: URS/ARUP/HMM JV

Project: _ California High Speed Train

Project No: 2636-001.0

Figure

Tested By: JH

Checked By: PH



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Sieve Analysis for Soil and Fine Aggregate

 Project:
 CA HSR FRE_BAK
 Technician:
 K. Ford

 TES#:
 23502-ZS9
 Date:
 9/20/2013

 Boring No.:
 S0065R
 Depth, ft
 51-51.5'

 Sample No.:
 SS12
 Classification:
 (SM) Silty Sand

	Weight (grams)	Maximum Sieve Size	Minimum Weight of Test Specimen, lbs. (kg)
Total Dry Sample + Tare Wt.	,	Sand	1.0 (0.5)
Tare Weight		3/8"	2.0 (1.0)
Total Dry Sample Wt.	74.2	1/2"	4.0 (2.0)
Initial Weight Fine		3/4"	11.0 (5.0)
Soil Before Wash	74.2	1"	22.0 (10.0)
Final Weight Fine		1 1/2"	33.0 (15.0)
Soil After Wash	45.0	2"	44.0 (20.0)

	Individual	Individual	Combined	Combined	
Sieve	Weight	%	%	%	
Size	Retained	Retained	Retained	Passing	Specs.
3 in.	0.0	0.0	0.0	100.0	
2 1/2 in.	0.0	0.0	0.0	100.0	
2 in.	0.0	0.0	0.0	100.0	
1 1/2 in.	0.0	0.0	0.0	100.0	
1 in.	0.0	0.0	0.0	100.0	
3/4 in.	0.0	0.0	0.0	100.0	
1/2 in.	0.0	0.0	0.0	100.0	
3/8 in.	0.0	0.0	0.0	100.0	
#4	0.0	0.0	0.0	100.0	
#8	0.1	0.1	0.1	99.9	
#10	0.2	0.3	0.4	99.6	
#16	0.2	0.3	0.7	98.1	
#30	3.1	4.2	4.9	95.2	
#40	1.7	2.3	7.1	92.9	
#50	2.8	3.8	10.9	89.1	
#100	15.9	21.4	32.3	67.8	
#200	19.4	26.1	58.5	41.7	
Pan					



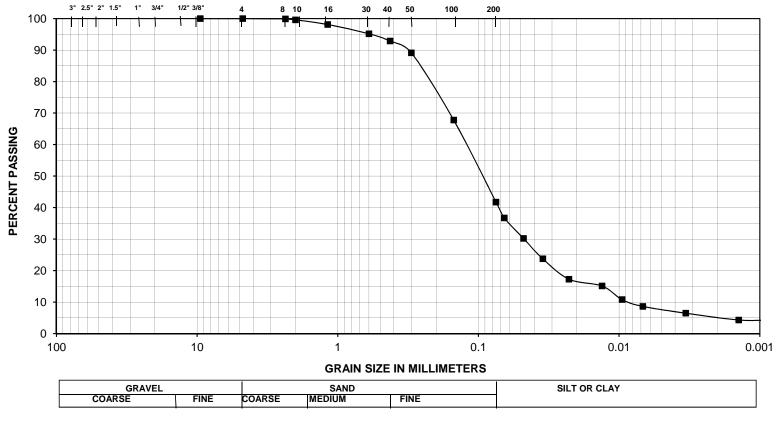
HYDROMETER TEST DATA SUMMARY ASTM D 422-63

PROJECT:		CA HSR F	RE_BAK			TES#:	S0065R
Boring Number		S006	65R	_		DATE:	9/20/2013
Sample Depth	, ft	51-5	1.5'	Sample No.:	SS12	TESTED BY: K. Ford	
					-		
Mass of Test Sample, g		75.00	"air-dried"		Hydrometer Type	151H	
Mass of Hygro	scopic Sample, g		13.20	"air-dried"			
Mass of Hygro	scopic Sample, g		13.06	"oven-dried"	Specific Gravity of	of Test Material	2.650
Mass of Test S	Sample, g		74.20	"oven-dried"	Specific Gravity of	of Test Solution	Varies
Time	Hydrometer	Corrected	Temperature	Effective Depth	Constant, K	Diameter, D	Amt. Suspended, P
(min.)	Reading	Reading	Degrees C	Table 2 (cm)	Table 3	(mm)	(%)
0.5	1.019	1.017	21	11.8	0.01348	0.0655	36.8
1	1.016	1.014	21	12.6	0.01348	0.0478	30.3
2	1.013	1.011	21	13.4	0.01348	0.0349	23.8
5	1.010	1.008	21	14.2	0.01348	0.0227	17.3
15	1.009	1.007	21	14.4	0.01348	0.0132	15.2
30	1.007	1.005	21	15.0	0.01348	0.0095	10.8
60	1.006	1.004	21	15.2	0.01348	0.0068	8.7
250	1.005	1.003	21	15.5	0.01348	0.0034	6.5
1440	1.004	1.002	21	15.8	0.01348	0.0014	4.3
4140	1.004	1.002	21	15.8	0.01348	0.0008	4.3



U.S. STANDARD SIEVE OPENING IN INCHES

U.S. STANDARD SIEVE NUMBERS



51-51.5'

Sample #	Classification	% Gravel	% Sand	% Silt	% Clay*	% Moist.	LL	PL	PI	Project:	CA HSR FRE_BAK
51-51.5'	(SM) Silty Sand	0	58.5	33.8	7.7	1.1					
										TES#:	S0065R
										Boring#:	SS12
										Date:	9/20/2013

^{*} Particles smaller than 5 Micron in diameter



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Sieve Analysis for Soil / Fine Aggregate ASTM C-136

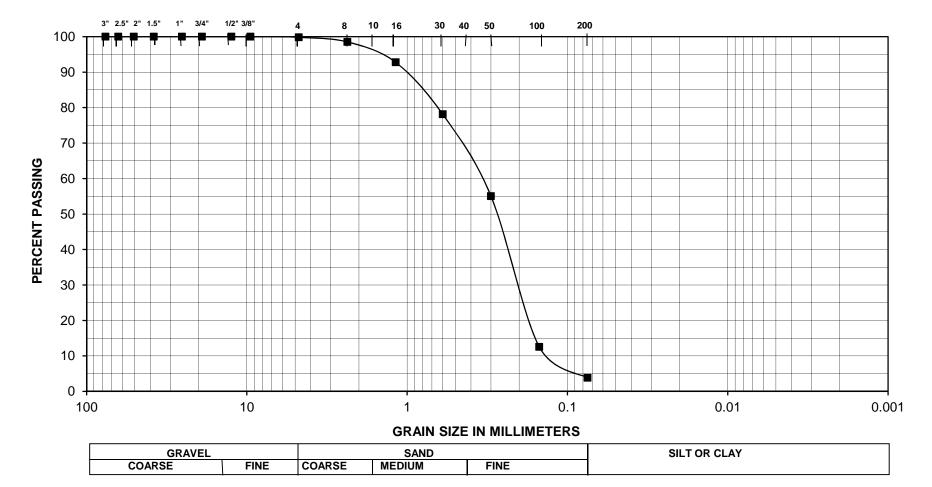
Project:	CA HSR		Technician:	K. Ford			
			Date:	11/25/2013			
TES#:	23502-ZS9		Sample No.:	MC13-2			
Boring #:	S0065R; 55.5-56'		Classification:	(SP) Fine Sand			
			-				
	_	Weight	Maximum	Minimum W	eight of		
		(lbs. or grams)	Sieve Size	Test Specime	n, lbs. (kg)		
Total Dry S	ample + Tare Wt.		Sand	1.0 (0	.5)		
Tare Weigl	nt		3/8"	2.0 (1	.0)		
Total Dry S	ample Wt.	167.8	1/2"	4.0 (2	.0)		
Initial Weig	ht Fine		3/4"	11.0 (5.0)			
Aggregate	Before Wash	167.8	1"	22.0 (10.0)			
Final Weig	ht Fine		1 1/2"	33.0 (1	5.0)		
Aggregate	After Wash	161.8	2"	44.0 (2	0.0)		
	Cumulative	Individual	Cumulative	Cumulative			
Sieve	Weight	Weights	%	%			
Size	Retained	Retained	Retained	Passing	Specs.		
3 in.			0.0	100.0	•		
l————							

Sieve Size	Weight Retained	Weights Retained	% Retained	% Passing	Specs.
	retained	retained			Орссэ.
3 in.			0.0	100.0	
2 1/2 in.			0.0	100.0	
2 in.			0.0	100.0	
1 1/2 in.			0.0	100.0	
1 in.			0.0	100.0	
3/4 in.			0.0	100.0	
1/2 in.			0.0	100.0	
3/8 in.			0.0	100.0	
#4	0.3	0.0	0.2	99.8	
#8	2.5	2.2	1.5	98.5	
#16	12.1	9.6	7.2	92.8	
#30	36.7	24.6	21.9	78.1	
#50	75.4	38.7	44.9	55.1	
#100	146.7	71.3	87.4	12.6	
#200	161.3	14.6	96.1	3.9	
Pan	161.8				



U.S. STANDARD SIEVE OPENING IN INCHES

U.S. STANDARD SIEVE NUMBERS



—**■**— MC13-2

Sample #	Classification	% Gravel	% Sand	% Silt	% Clay	% Moist.	LL	PL	PI	Project:	CA HSR
MC13-2	(SP) Fine Sand	0.2	95.9	3.9							
										TES#:	23502-ZS9
										Boring #	S0065R; 55.5-56'
										Date:	11/25/2013



Construction Testing & Inspection * Geotechnical & Environmental Engineering

Sieve Analysis for Soil and Fine Aggregate

 Project:
 CA HSR FRE_BAK
 Technician:
 K. Ford

 TES#:
 23502-ZS9
 Date:
 11/19/2013

 Boring No.:
 S0065R
 Depth, ft
 81-81.5'

 Sample No.:
 SS18
 Classification:
 (ML) Clayey Sandy Silt

	Weight (grams)	Maximum Sieve Size	Minimum Weight of Test Specimen, lbs. (kg)
Total Dry Sample + Tare Wt.	(9:0)	Sand	1.0 (0.5)
Tare Weight		3/8"	2.0 (1.0)
Total Dry Sample Wt.	74.5	1/2"	4.0 (2.0)
Initial Weight Fine		3/4"	11.0 (5.0)
Soil Before Wash	74.5	1"	22.0 (10.0)
Final Weight Fine		1 1/2"	33.0 (15.0)
Soil After Wash	43.4	2"	44.0 (20.0)

	Individual	Individual	Combined	Combined	
Sieve	Weight	%	%	%	
Size	Retained	Retained	Retained	Passing	Specs.
3 in.	0.0	0.0	0.0	100.0	
2 1/2 in.	0.0	0.0	0.0	100.0	
2 in.	0.0	0.0	0.0	100.0	
1 1/2 in.	0.0	0.0	0.0	100.0	
1 in.	0.0	0.0	0.0	100.0	
3/4 in.	0.0	0.0	0.0	100.0	
1/2 in.	0.0	0.0	0.0	100.0	
3/8 in.	0.0	0.0	0.0	100.0	
#4	0.0	0.0	0.0	100.0	
#8	0.0	0.0	0.0	100.0	
#10	0.1	0.1	0.1	99.9	
#16	0.2	0.3	0.4	99.6	
#30	0.1	0.1	0.5	99.5	
#40	0.1	0.1	0.7	99.3	
#50	0.1	0.1	0.8	99.2	
#100	15.3	20.5	21.3	78.7	
#200	14.0	18.8	40.1	59.9	
Pan					



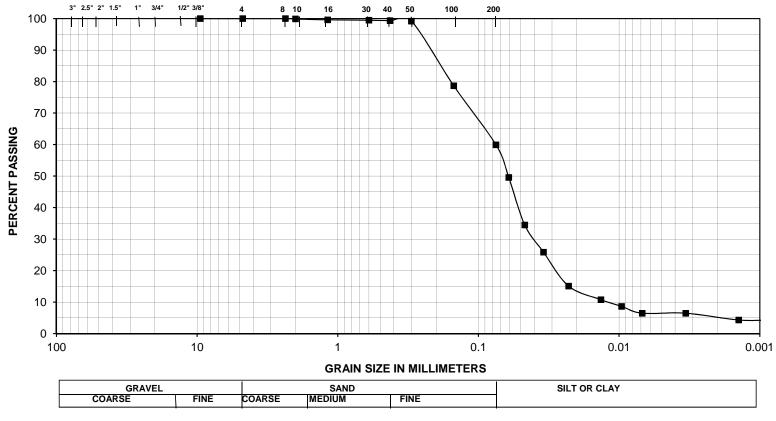
HYDROMETER TEST DATA SUMMARY ASTM D 422-63

PROJECT:	PROJECT: CA HSR FRE_BAK					TES#:	S0065R
Boring Number		S006	65R			DATE:	11/19/2013
Sample Depth	, ft	81-8	1.5'	Sample No.:	SS18	TESTED BY:	K. Ford
Mass of Test	Sample, g		75.00	"air-dried"	٦	Hydrometer Type	151H
	scopic Sample, g		16.24	"air-dried"	1	, , , ,	
	scopic Sample, g		16.13	"oven-dried"	Specific Gravity	of Test Material	2.650
Mass of Test S	Sample, g		74.49	"oven-dried"	Specific Gravity	of Test Solution	Varies
	T		1	_	,		
Time	Hydrometer	Corrected	Temperature	Effective Depth	Constant, K	Diameter, D	Amt. Suspended, P
(min.)	Reading	Reading	Degrees C	Table 2 (cm)	Table 3	(mm)	(%)
0.5	1.025	1.023	21	10.2	0.01348	0.0609	49.6
1	1.018	1.016	21	12.1	0.01348	0.0469	34.5
2	1.014	1.012	21	13.1	0.01348	0.0345	25.9
5	1.009	1.007	21	14.4	0.01348	0.0229	15.1
15	1.007	1.005	21	15.0	0.01348	0.0135	10.8
30	1.006	1.004	21	15.2	0.01348	0.0096	8.6
60	1.005	1.003	21	15.5	0.01348	0.0069	6.5
250	1.005	1.003	21	15.5	0.01348	0.0034	6.5
1440	1.004	1.002	21	15.8	0.01348	0.0014	4.3
4140	1.004	1.002	21	15.8	0.01348	0.0008	4.3



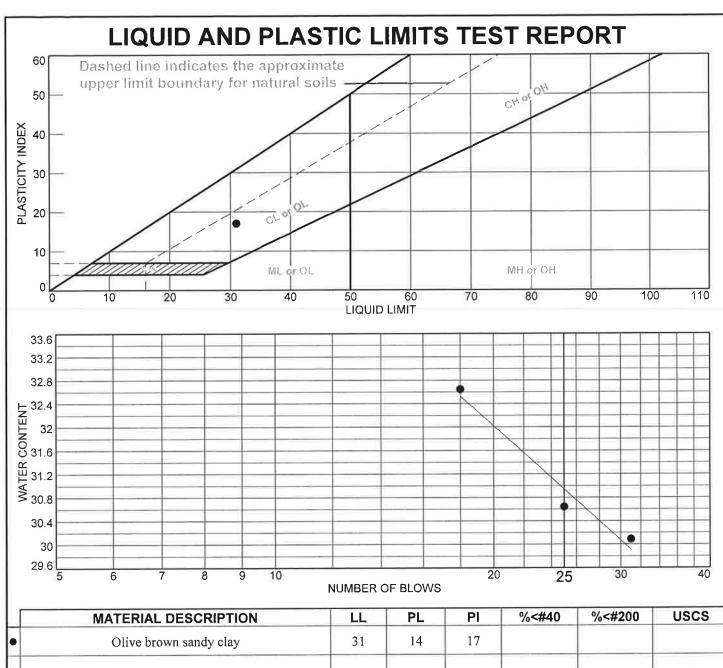
U.S. STANDARD SIEVE OPENING IN INCHES

U.S. STANDARD SIEVE NUMBERS



Sample #	Classification	% Gravel	% Sand	% Silt	% Clay*	% Moist.	LL	PL	PΙ	Project:	CA HSR FRE_BAK
81-81.5'	(ML) Clayey Sandy Silt	0	40.1	53.5	6.3	0.7					
										TES#:	S0065R
										Boring#:	SS18
										Date:	11/19/2013

^{*} Particles smaller than 5 Micron in diameter



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
Olive brown sandy clay	31	14	17			
1.00						

Project No. 2636-001.0 Client: URS/ARUP/HMM JV Remarks:

Project: California High Speed Train

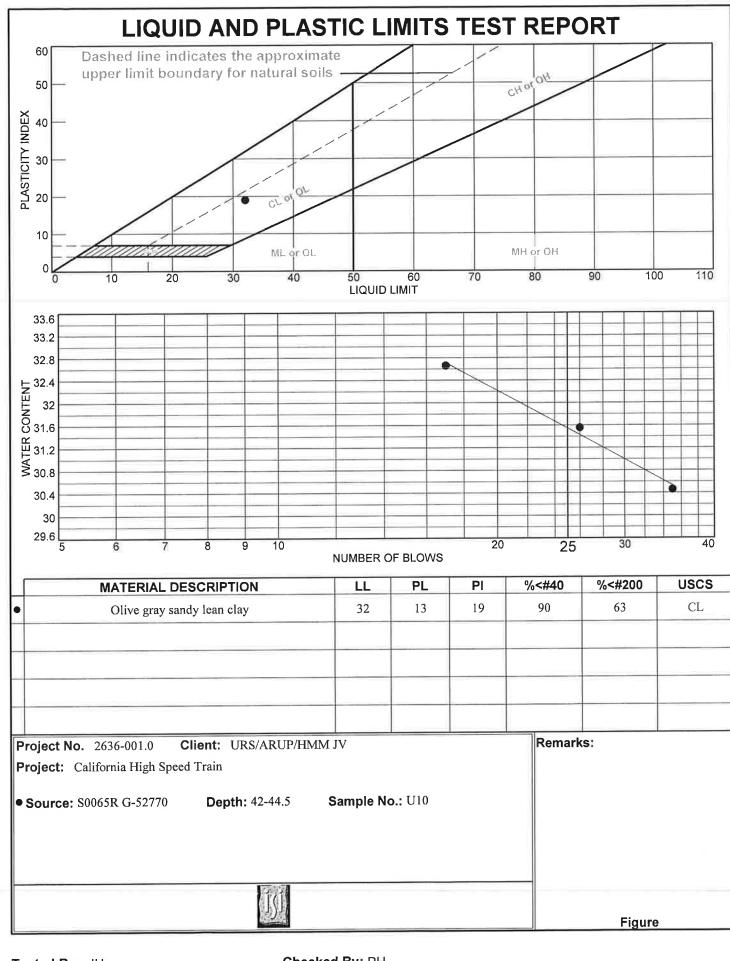
• Source: S0065R G-52770

Depth: 35.5-36.0

Sample No.: MC08-2



Figure



Tested By: JH Checked By: PH



Determination of Atterberg Limits ASTM D 4318, CTM 204

Project Name:	HSR	Boring No	o.: S0065R			Project No.: 23502-ZS9		
Sample No:	MC11-2	Depth:	45.5-46'	Date:	11/26/13	Tested By: K.F		
Soil Classification:	ML	•	•					

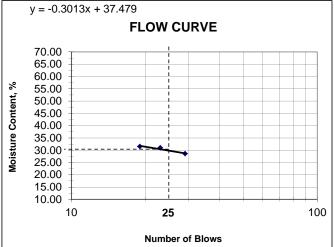
		PLASTIC LIMIT	Γ		LIQUID LIMIT			
A Tes No.	1	2	3	No. of Blows	29	23	19	
B Tare No.	1	2	3		1	2	3	
C Mass of Pan + Dry Soil, g	21.37	21.35	21.24		30.54	22.63	31.59	
D Mass of Pan + Wet Soil, g	21.54	21.56	21.40		31.14	23.20	32.62	
E Mass of Pan, g	20.69	20.56	20.65		28.44	20.79	28.32	
F Mass of Water, g	0.17	0.21	0.16	0.00	0.60	0.57	1.03	
G Mass of Dry Soil, g	0.68	0.79	0.59		2.10	1.84	3.27	
H Moisture Content, %	25.00	26.58	27.12		28.57	30.98	31.50	

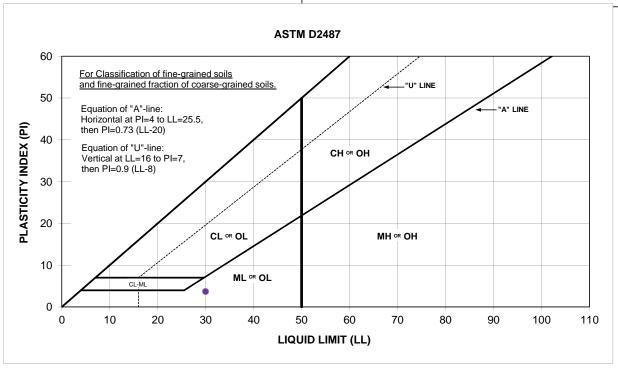
I Average Moisture Content, % (PL)

42.1795

26.23

Liquid Limit:	29.9
Plastic Limit: Line I	26.2
Plasticity Index: Pl = LL - PL	3.7







Determination of Atterberg Limits ASTM D 4318, CTM 204

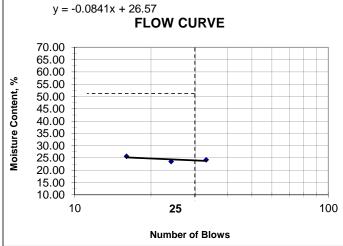
Project Name:	HSR	Boring No	o.: S0065R		Project No.: 23502-ZS9		
Sample No:	MC17-2	Depth:	75.5-76'	Date:	11/26/13	Tested By: K.F	
Soil Classification:	SP/SM						

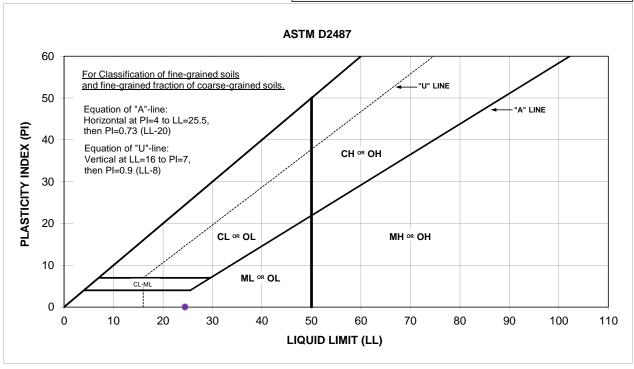
·		PLASTIC LIMIT	<u> </u>	-	LIQUID LIMIT					
A Tes No.	1	2	3	No. of Blows	16	24	33			
B Tare No.	1	2	3		1	2	3			
C Mass of Pan + Dry Soil, g	N	ONPLASTI	С		30.34	31.44	23.06			
D Mass of Pan + Wet Soil, g					30.86	32.06	23.63			
E Mass of Pan, g					28.32	28.81	20.71			
F Mass of Water, g				0.00	0.52	0.62	0.57			
G Mass of Dry Soil, g					2.02	2.63	2.35			
H Moisture Content, %					25.74	23.57	24.26			

I Average Moisture Content, % (PL)

42.1795

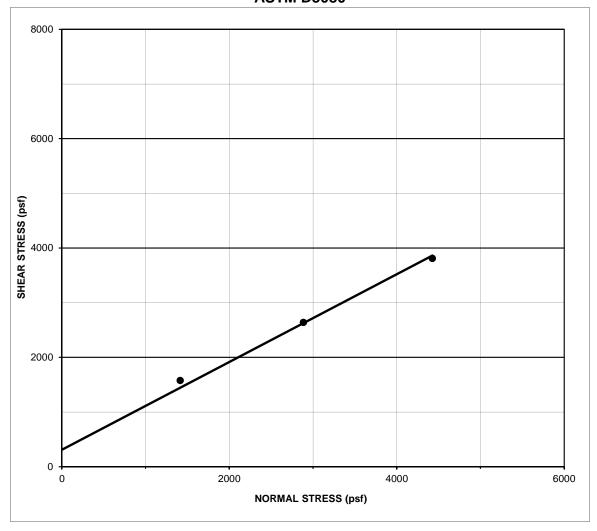
Liquid Limit:	24.5
Plastic Limit: Line I	0.0
Plasticity Index: Pl = LL - PL	Non-Plastic







Direct Shear Test ASTM D3080



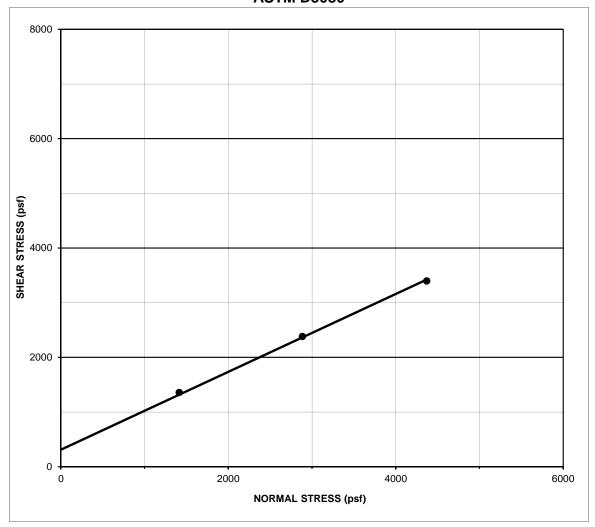
PROJECT:	HSR
TES NO.:	23502-ZS9
SAMPLE DATE.:	11/25/2013
BORING NO.:	S0065R
SAMPLE NO.:	MC02-1 (6-6.5')
DESCRIPTION:	Silty Sand (SM)

Cohesive Pressure, psf	520
Internal Friction Angle	37

SPECIMEN	Α	В	С	D	E
DRY DENSITY (pcf)	101.1	101.1	101.1		
INITIAL WATER CONTENT (%)	9.1	09.1	9.1		
FINAL WATER CONTENT (%)	36.00	35.00	35.00		
NORMAL STRESS (psf)	1415	2885	4426		
NORMAL STRESS (psi)	10	20	30		
MAXIMUM SHEAR (psf)	1578	2639	3810		



Direct Shear Test ASTM D3080

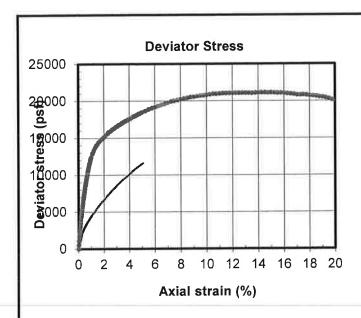


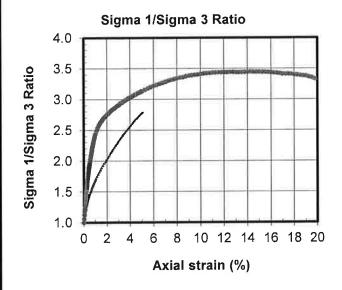
PROJECT:	HSR
TES NO.:	23502-ZS9
SAMPLE DATE.:	11/25/2013
BORING NO.:	S0065R
SAMPLE NO.:	MC04-1 (16-16.5')
DESCRIPTION:	Silty Sand (SM)

Cohesive Pressure, psf	390
Internal Friction Angle	35

SPECIMEN	Α	В	С	D	E
DRY DENSITY (pcf)	1140.0	1140.0	1140.0		
INITIAL WATER CONTENT (%)	15.3	15.3	15.3		
FINAL WATER CONTENT (%)	26.00	27.00	27.00		
NORMAL STRESS (psf)	1415	2885	4371		
NORMAL STRESS (psi)	10	20	30		
MAXIMUM SHEAR (psf)	1359	2382	3397		

Boring Number		S0065R					S0065R	
Sample Number		MC08-1					MC08-1	
Depth (ft)		36					36	
Depth (it) Date Tested		11/24/13					11/26/13	
	11/24/13						1 1/20/10	
Description	Olive silty sand					Olive silty sand		
Sample Condition	Undisturbed					U	ndisturbed	
	B:	Afte	er		After		After	
	Initial	Consoli	0.00	Initial	Consolidat	ion Initial	Consolidation	
Height (in)		5.5		,,,,,,,,	00110011011	5.60	5.37	
Diameter (in)		2.3				2.45	2.44	
		2.0	,0			2.28	THE REAL PROPERTY.	
Height/Diameter Ratio		870.	06			899.20	870.06	
Total Weight (g)						20.94	17.02	
Moisture Content (%)		17.0						
Moisture Content From		tire samp					tire sample	
Wet Density (pcf)						129.53	131.74	
Dry Density (pcf)		115.				107.10	112.58	
Area (cm²)		28.2				30.49	30.24	
Total Volume (cc)	419.69	400.				433.37	412.27	
Void Ratio		0.45	551			0.5738	0.4971	
Saturation (%)		101	1.0			98.5	92.4	
Specific Gravity		2.70					2.70	
Specific Gravity From	Assumption					P	ssumption	
B value Before Consolidation		0.97					0.97	
Total Back Pressure (psf)		5760					5760	
Rate of Strain (%/min)		0.02					0.02	
Axial Strain at Failure (%)		5.01					14.26	
	6480						8640	
Effective Consolidation Stress (psf)						_	29774	
Major Effective Stress at Failure (psf) σ1								
Minor Effective Stress at Failure (psf) σ3							8640	
Deviator Stress at Failure (psf)		11558					21134	
Pore Pressure at Failure (psf)		0					0	
Failure Sketch		Photo			Photo			
		ADDITIO	NAI INF	ORMAT	ION REQUIR	RED BY AST	M D 4767	
Classification Based On		Visual					Visual	
Liquid Limit		VISUAI					110001	
Plastic Limit				_				
					-			
Remarks	-	ery spong						
The follow	ing infor	mation is	the sar	me for al	l samples			
Method for Spec	imen Sat	uration			W			
Method used to determine Area after					Meth	od A		
	Failure			Ma	ximum Effect	tive o1 / o3 ra	atio	
	_							
Client: URS/ARUP/HMM JV	Во	oring #: S	0065R			Sample #:	MC08-1	
Project: California High Speed Train	Dep	oth (ft): 3	86					
Project #: 2636-001.0		Soil: Olive silty sand						
		RIAXIA			ESSION		TXCD	
D-7161	CONS	OLIDA	יובט-	DIVAIL	120			





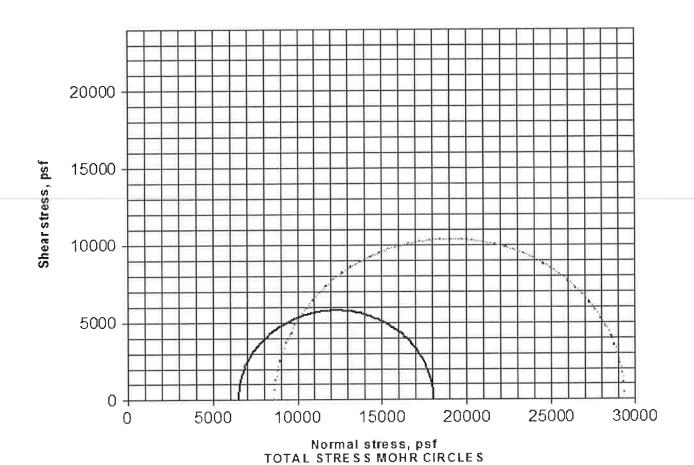
Failure Criteria Maximum Effective σ1 / σ3 ratio

	Duringto California High Conned Train					D	th (ft):	26							
	Client: URS/ARUP/HMM JV					Bor	Boring #: S0065R				Sample #: MC08-1				
dot	8640	21134	14.26	5.60	2.45	20.94	129.5	107.1	0.574	98.5	2.70	0.02			2.3
dash															
solid	6480	11558	5.01	5.69	2.40	20.94	133.8	110.6	0.524	107.9	2.70	0.02			2.4
Line Type	Principal	Maximum Deviator Stress at failure (psf)	Axial Strain at Failure (%)	Initial Height (in.)		Initial Moisture Content (%)	Initial Wet Density (pcf)	Initial Dry Density (pcf)	Initial Void Ratio	Initial Saturat ion (%)	,	Rate of Strain (%/min)	Liquid	Plastic Limit	Height to Diameter Ratio

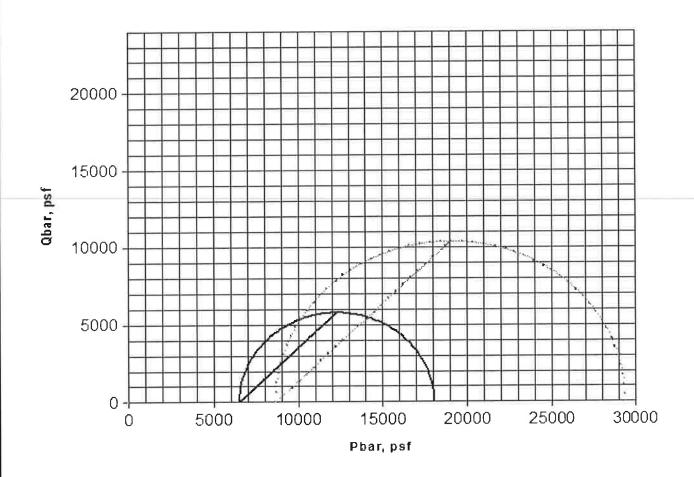
Project: California High Speed Train Depth (ft): 36

Project #: 2636-001.0 Soil: Olive silty sand

ASTM STAGED TRIAXIAL COMPRESSION TXCD
D-7161 CONSOLIDATED-DRAINED



	Failure	Criteria	Maxin	num Ei	ffectiv	/e σ1 / σ	3 ratio							411	
Line Type	Minor Principal Stress at failure (psf) σ_3		Axial Strain at Failure (%)	Initial Height (in.)	Initial Diam. (in.)	Initial Moisture Content (%)	Initial Wet Density (pcf)	Initial Dry Density (pcf)	Initial Void Ratio	Initial Satura- tion (%)	Specific Gravity (assumed)	Rate of Strain (%/min)	Liquid	Plastic Limit	Height to Diameter Ratio
solid	6480	11558	5.01	5.69	2.40	20.94	133.8	110.6	0.524	107.9	2.70	0.02			2.4
dash															
dot	8640	21134	14.26	5.60	2.45	20.94	129.5	107.1	0.574	98.5	2.70	0.02			2.3
	Client:	URS/AR	UP/HI	MM JV			Boring #: S0065R					Sample #: MC08-1			
	Project:	Californ	iia Hig	h Spe	ed Tra	in	Dep	th (ft):	36						
Pr	oject #:	2636-00	1.0					Soil:	Olive	silty sa	ınd				
	ASTM STAGED D-7161 CONS												T	CD	



	Failure	Criteria	Maxin	num Ef	ffectiv	/e σ1 / σ	3 ratio								
Line Type	Minor Principal Stress at failure (psf) σ_3		Axial Strain at Failure (%)	Initial Height (in.)	Initial Diam. (in.)	Initial Moisture Content (%)	Initial Wet Density (pcf)	Initial Dry Density (pcf)	Initial Void Ratio	Initial Satura- tion (%)	Specific Gravity (assumed)	Rate of Strain (%/min)	Liquid	Plastic Limit	Height to Diameter Ratio
solid	6480	11558	5.01	5.69	2.40	20.94	133.8	110.6	0.524	107.9	2.70	0.02			2.4
dash															
dot	8640	21134	14.26	5.60	2.45	20.94	129.5	107.1	0.574	98.5	2.70	0.02			2.3
	Client:	URS/AR	UP/HI	/M JV			Bor	ing #:	S0065	R		Sam	ple #:	MC08	-1
ı	Project:	Californ	iia Higi	h Spee	ed Tra	in	Dep	th (ft):	36						
Pr	oject #:	2636-00	1.0					Soil:	Olive	silty sa	nd				
	ASTM STAGED CONS										l		T	(CD	

Staged Consolidated-Drained Triaxial Compression Test

Client Name URS/ARUP/HMM JV

Clients Project Name California High Speed Train

Clients Project Number 2636-001.0

Boring No. S0065R Sample No. MC08-1 Depth (ft) 36.00 Date Tested 11/24/13

Load Cell 10000 Shear rate (%/min) 0.02

COMPUTER FILE NAMÉ 13-TXCD-028

Confining Pressure (psf) 6480

Sample Description (visual) Olive silty sand

					Pore						
			Axial	Deviator	Water					171	
		Load	Strain	Stress	Pressure	Effective	Effective	Effective	Pbar	Qbar	
Elapsed Time	Defl (in)	(lbs)	(%)	(psf)	(psf)	σ ₃ (psf)	σ ₁ (psf)	σ_1/σ_3	(psf)	(psf)	Α
(hh:mm:ss)	0.0000	32.72	0.00	0.0	0.0	6480	6480.0	1.00	6480.0	0.0	0.00
0:01:30	0.0014	43.64	0.02	359.6	0.0	6480.0	6839.6	1.06	6659.8	179.8	0.00
0:03:00	0.0028	53.33	0.05	678.3	0.0	6480.0	7158.3	1.10	6819.1	339.1	0.00
0:04:30	0.0042	61.05	0.08	932.3	0.0	6480.0	7412.3	1.14	6946.2	466.2	0.00
0:06:00	0.0056	67.98	0.10	1159.9	0.0	6480.0	7639.9	1.18	7060.0	580.0	0.00
0:07:30	0.0070	74.16	0.13	1363.0	0.0	6480.0	7843.0	1.21	7161.5	681.5	0.00
0:09:01	0.0084	80.06	0.15	1556.5	0.0	6480.0	8036.5	1.24	7258.2	778.2	0.00
0:10:31	0.0098	85.04	0.18	1719.9	0.0	6480.0	8199.9	1.27	7339.9	859.9	0.00
0:12:01	0.0112	89.62	0.20	1869.7	0.0	6480.0	8349.7	1.29	7414.9	934.9	0.00
0:13:31	0.0126	93.44	0.23	1994.9	0.0	6480.0	8474.9	1.31	7477.4	997.4	0.00
0:15:02	0.0140	97.36	0.25	2123.3	0.0	6480.0	8603.3	1.33	7541.6	1061.6	0.00
0:16:32	0.0154	100.27	0.28	2218.1	0.0	6480.0	8698.1	1.34	7589.1	1109.1	0.00
0:18:02	0.0168	104.27	0.30	2349.0	0.0	6480.0	8829.0	1.36	7654.5	1174.5	0.00
0:19:32	0.0182	107.45	0.33	2452.7	0.0	6480.0	8932.7	1.38	7706.3	1226.3	0.00
0:21:02	0.0196	110.38	0.35	2548.3	0.0	6480.0	9028.3	1.39	7754.2	1274.2	0.00
0:22:32	0.0210	113.45	0.38	2648.2	0.0	6480.0	9128.2	1.41	7804.1	1324.1	0.00
0:24:02	0.0224	116.51	0.40	2747.8	0.0	6480.0	9227.8	1.42	7853.9	1373.9	0.00
0:25:33	0.0238	119.33	0.43	2839.6	0.0	6480.0	9319.6	1.44	7899.8	1419.8	0.00
0:27:03	0.0252	121.86	0.45	2921.9	0.0	6480.0	9401.9	1.45	7941.0	1461.0	0.00
0:28:33	0.0266	124.68	0.48	3013.6	0.0	6480.0	9493.6	1.47	7986.8	1506.8	0.00
0:30:03	0.0280	127.66	0.50	3110.5	0.0	6480.0	9590.5	1.48	8035.2	1555.2	0.00
0:31:34	0.0294	129.94	0.53	3184.2	0.0	6480.0	9664.2	1.49	8072.1	1592.1	0.00
0:33:04	0.0309	132.35	0.55	3262.3	0.0	6480.0	9742.3	1.50	8111.2	1631.2	0.00
0:34:34	0.0323	134.78	0.58	3341.1	0.0	6480.0	9821.1	1.52	8150.6	1670.6	0.00
0:36:04	0.0337	137.22	0.60	3420.3	0.0	6480.0	9900.3	1.53	8190.1	1710.1	0.00
0:37:34	0.0351	139.55	0.63	3495.5	0.0	6480.0	9975.5	1.54	8227.8	1747.8	0.00
0:39:04	0.0365	141.55	0.65	3560.2	0.0	6480.0	10040.2	1.55	8260.1	1780.1	0.00
0:40:34	0.0379	144.10	0.68	3642.6	0.0	6480.0	10122.6	1.56	8301.3	1821.3	0.00
0:42:04	0.0393	146.10	0.70	3707.2	0.0	6480.0	10187.2	1.57	8333.6	1853.6	0.00
0:43:35	0.0407	148.04	0.73	3769.6	0.0	6480.0	10249.6	1.58	8364.8	1884.8	0.00
0:45:05	0.0421	150.34	0.75	3843.9	0.0	6480.0	10323.9	1.59	8401.9	1921.9	0.00
0:46:35	0.0435	152.48	0.78	3912.8	0.0	6480.0	10392.8 10468.9	1.60	8436.4 8474.4	1956.4 1994.4	0.00
0:48:05	0.0449	154.84	0.80	3988.9	0.0	6480.0		1.62	8514.4	2034.4	0.00
0:49:35	0.0463	157.32	0.83	4068.8	0.0	6480.0	10548.8	1.63 1.64	8545.9	2065.9	0.00
0:51:05	0.0477	159.28	0.85	4131.7	0.0	6480.0	10611.7 10673.9		8577.0	2003.9	0.00
0:52:35	0.0491	161.22	0.88	4193.9	0.0	6480.0		1.65		-	_
0:54:06	0.0505	163.25		4259.0	0.0	6480.0	10739.0	1.66	8609.5 8643.5	2163.5	
0:55:36	0.0519	165.36		4327.0 4383.2	0.0	6480.0 6480.0	10807.0 10863.2	1.67 1.68		2191.6	
0:57:06	0.0533	167.12			0.0	6480.0	10863.2	1.69		2224.8	
0:58:36	0.0547	169.19		4449.7	0.0	6480.0	11010.0	1.69		2265.0	
1:00:06	0.0561	171.69		4530.0 4754.3	0.0	6480.0	11234.3	1.73	8857.1	2377.1	0.00
1:06:06	0,0617	178.72				6480.0	11472.8	1.73		2496.4	_
1:12:07	0.0673	186.20		4992.8	0.0						
1:18:07	0.0729	193.70	1.30	5231.4	0.0	6480.0	11711.4	1.81	9095.7	2615.7	0.00

INSPECTION SERVICES, INC.

CHECKED BY _____

Staged Consolidated-Drained Triaxial Compression Test

Client Name URS/ARUP/HMM JV

Clients Project Name California High Speed Train

Clients Project Number 2636-001.0

Boring No. S0065R Sample No. MC08-1 Depth (ft) 36.00 Date Tested 11/24/13

Load Cell 10000 Shear rate (%/min) 0.02

COMPUTER FILE NAME 13-TXCD-028

Confining Pressure (psf) 6480

Initial After Consol
Height (in) 5.69 5.59
Diameter (in) 2.40 2.36
Volume (cc) 419.69 400.69

Sample Description (visual) Olive silty sand

Volume (cc)	419.69	400	.69								
			Assiml	Davieter	Pore Water						
		1	Axial	Deviator Stress	Pressure	Effective	Effective	Effective	Pbar	Qbar	
Eleven d Time	Doft (in)	Load	Strain (%)	(psf)	(psf)		σ ₁ (psf)	σ_1/σ_3	(psf)	(psf)	Α
Elapsed Time	Defl (in)	(lbs)			**	σ ₃ (psf) 6480.0	11940.3	1.84	9210.2	2730.2	0.00
1:24:07	0.0785	200.91	1.40	5460.3	0.0	6480.0	12169.8	1.88	9324.9	2844.9	
1:30:07	0.0841	208.16	1.50	5689.8	0.0		12394.1	1.91	9437.0	2957.0	
1:36:07	0.0897	215.26	1.60	5914.1	0.0	6480.0		1.95	9542.2	3062.2	0.00
1:42:07	0.0953	221.95	1.70	6124.4	0.0	6480.0	12604.4	1.95	9645.8	3165.8	0.00
1:48:07	0.1009	228.55	1.80	6331.6	0.0	6480.0	12811.6		9757.2	3277.2	0.00
1:54:07	0.1065	235.65	1.90	6554.5	0.0	6480.0	13034.5	2.01			
2:00:07	0.1121	241.79	2.00	6746.0	0.0	6480.0	13226.0	2.04	9853.0	3373.0	
2:06:07	0.1177	247.90	2.11	6935.9	0.0	6480.0	13415.9	2.07	9947.9	3467.9	0.00
2:12:07	0.1233	254.30	2.21	7134.9	0.0	6480.0	13614.9	2.10	10047.5	3567.5	
2:18:07	0.1289	260.56	2.31	7329.1	0.0	6480.0	13809.1	2.13	10144.5	3664.5	
2:24:07	0.1345	266.17	2.41	7501.8	0.0	6480.0	13981.8	2.16	10230.9	3750.9	
2:30:08	0.1401	272.00	2.51	7681.2	0.0	6480.0	14161.2	2.19	10320.6	3840.6	
2:36:08	0.1457	278.26	2.61	7874.1	0.0	6480.0	14354.1	2.22	10417.1	3937.1	0.00
2:42:08	0.1513	284.08	2.71	8052.4	0.0	6480.0	14532.4	2.24	10506.2	4026.2	
2:48:08	0.1569	289.39	2.81	8214.2	0.0	6480.0	14694.2	2.27	10587.1	4107.1	0.00
2:54:08	0.1625	295.34	2.91	8395.8	0.0	6480.0	14875.8	2.30	10677.9	4197.9	
3:00:08	0.1681	301.66	3.01	8589.1	0.0	6480.0	15069.1	2.33	10774.6	4294.6	
3:06:08	0.1737	307.37	3.11	8762.3	0.0	6480.0	15242.3	2.35	10861.1	4381.1	
3:12:08	0.1793	312.75	3.21	8924.6	0.0	6480.0	15404.6	2.38	10942.3	4462.3	0.00
3:18:08	0.1849	318.72	3.31	9105.6	0.0	6480.0	15585.6	2.41	11032.8	4552.8	0.00
3:24:08	0.1905	324.26	3.41	9272.4	0.0	6480.0	15752.4	2.43	11116.2	4636.2	0.0
3:30:08	0.1961	329.35	3.51	9424.5	0.0	6480.0	15904.5	2.45	11192.3	4712.3	0.0
3:36:08	0.2017	334.84	3.61	9588.8	0.0	6480.0	16068.8	2.48	11274.4	4794.4	0.00
3:42:08	0.2073	340.23	3.71	9749.7	0.0	6480.0	16229.7	2.50	11354.8	4874.8	0.0
3:48:08	0.2129	345.05	3.81	9892.4	0.0	6480.0	16372.4	2.53	11426.2	4946.2	0.00
3:54:08	0.2185	350.23	3.91	10046.0	0.0	6480.0	16526.0	2.55	11503.0	5023.0	0.00
4:00:08	0.2241	355.54	4.01	10203.4	0.0	6480.0	16683.4	2.57	11581.7	5101.7	0.0
4:06:08	0.2297	360.33	4.11	10343.7	0.0	6480.0	16823.7	2.60	11651.9	5171.9	0.00
4:12:09	0.2353	365.32	4.21	10490.4	0.0	6480.0	16970.4	2.62	11725.2	5245.2	0.0
4:18:09	0.2409	370.19	4.31	10632.8	0.0	6480.0	17112.8	2.64	11796.4	5316.4	0.0
4:24:09	0.2465	375.30		10782.8	0.0	6480.0	17262.8	2.66	11871.4		
4:30:09	0.2521	379.40		10900.3	0.0	6480.0	17380.3	2.68	11930.2		
	0.2577	384.31	4.61	11043.0	0.0	6480.0	17523.0	2.70	12001.5		
4:36:09	0.2633	388.95		11176.9	0.0	6480.0	17656.9	2.72	12068.5		
4:42:09	0.2689	393.21	4.71	11298.8	0.0	6480.0	17778.8	2.74	12129.4		
4:48:09				11432.0	0.0	6480.0	17912.0	2.76	12196.0		
4:54:09	0.2745	397.85			0.0	6480.0	18038.1	2.78	12259.0		
5:00:09	0.2801	402.26		11558.1		6480.0	18037.4	2.78	12258.7		
5:00:28	0.2804	402.26	5.02	11557.4	0.0	1 0400.0	10037.4	2.70	12230.7	10110.1	1 0.00

Staged Consolidated-Drained Triaxial Compression Test

Client Name URS/ARUP/HMM JV

Clients Project Name California High Speed Train

Clients Project Number 2636-001.0

Boring No. S0065R Sample No. MC08-1 Depth (ft) 36.00

Date Tested 11/26/13

Load Cell 10000 Shear rate (%/min) 0.02

COMPUTER FILE NAME 13-TXCD-030

Confining Pressure (psf) 8640

After Consol Initial

5.60 5.37 Height (in) Diameter (in) 2.45

Sample Description (visual) Olive silty sand

2.44 412.27 433.37 Volume (cc)

Pbar (psf) 8640.0	Qbar (psf)	
(psf)		
(psf)		1 1
		A
0040.0	0.0	0.00
8901.6	261.6	0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
11173.8		0.00
11352.4		0.00
11525.7		0.00
11689.6		0.00
11853.8		0.00
		0.00
		0.00
		0.00
		0.00
12619.9		0.00
		0.00
12920.4		0.00
13062.6		0.00
13193.3		0.00
13328.2		0.00
13456.7		0.00
13582.7		0.00
13698.5		0.00
13819.2		0.00
13929.8	5289.8	0.00
14038.3	5398.3	0.00
14137.8	5497.8	0.00
14228.1	5588.1	0.00
14330.3	5690.3	0.00
14420.4	5780.4	0.00
14516.6		0.00
14597.9	5957.9	0.00
14679.2	6039.2	0.00
14748.9	6108.9	0.00
14826.9	6186.9	0.00
15070.0	6430.0	0.00
15276.5	6636.5	0.00
15458.7	6818.7	0.00
9 9 9 9 9 9 9 1 10 1 1 1 1 1 1 1 1 1 1 1	1183.3 1453.2 1703.2 1940.4 10168.1 10386.6 10595.8 10796.5 10984.8 1173.8 11352.4 11525.7 1689.6 1853.8 2009.8 20169.2 2327.1 2472.8 2619.9 2772.7 2920.4 3062.6 3193.3 3328.2 3456.7 3582.7 3582.7 3582.7 3698.5 3819.2 3929.8 4038.3 4137.8 4228.1 4330.3 4420.4 4516.6 4597.9 4679.2 4748.9 4826.9 5070.0 5276.5	183.3 543.3 2453.2 813.2 2703.2 1063.2 2940.4 1300.4 0168.1 1528.1 0386.6 1746.6 0595.8 1955.8 0796.5 2156.5 0984.8 2344.8 1173.8 2533.8 1352.4 2712.4 1525.7 2885.7 1689.6 3049.6 1853.8 3213.8 2009.8 3369.8 2169.2 3529.2 2327.1 3687.1 2472.8 3832.8 2619.9 3979.9 2772.7 4132.7 2920.4 4280.4 3062.6 4422.6 3193.3 4553.3 3328.2 4688.2 3456.7 4816.7 3582.7 4942.7 3698.5 5058.5 3819.2 5179.2 3929.8 5289.8 4038.3 5398.3 4137.8

Staged Consolidated-Drained Triaxial Compression Test

Client Name URS/ARUP/HMM JV

Clients Project Name California High Speed Train

Clients Project Number 2636-001.0

Boring No. S0065R Sample No. MC08-1 Depth (ft) 36.00

Date Tested 11/26/13

Load Cell 10000 Shear rate (%/min) 0.02

COMPUTER FILE NAME 13-TXCD-030

Confining Pressure (psf) 8640

After Consol Initial

5.60 5.37 Height (in) 2.44 Diameter (in) 2.45

Sample Description (visual) Olive silty sand

433.37 412.27 Volume (cc)

	433.37		.27		Dave						
				.	Pore						
1		ll	Axial	Deviator	Water		··	F. C	Dhan	Ohar	
l		Load	Strain	Stress	Pressure	Effective		Effective	Pbar	Qbar	,
Elapsed Time	Defl (in)	(lbs)	(%)	(psf)	(psf)	σ ₃ (psf)	σ ₁ (psf)	σ_1/σ_3	(psf)	(psf)	A
1:24:04	0.0752	491.06	1.40	13923.0	0.0	8640.0	22563.0	2.61	15601.5	6961.5	0.00
1:30:04	0.0806	499.43	1.50	14162.3	0.0	8640.0	22802.3	2.64	15721.1	7081.1	0.00
1:36:05	0.0860	507.54	1.60	14393.2	0.0	8640.0	23033.2	2.67	15836.6	7196.6	0.00
1:42:05	0.0913	515.25	1.70	14611.2	0.0	8640.0	23251.2	2.69	15945.6	7305.6	0.00
1:48:05	0.0967	521.99	1.80	14799.8	0.0	8640.0	23439.8	2.71	16039.9	7399.9	0.00
1:54:05	0.1021	527.84	1.90	14960.8	0.0	8640.0	23600.8	2.73	16120.4	7480.4	0.00
2:00:05	0.1075	534.08	2.00	15133.4	0.0	8640.0	23773.4	2.75	16206.7	7566.7	0.00
2:06:05	0.1128	539.82	2.10	15290.7	0.0	8640.0	23930.7	2.77	16285.3	7645.3	0.00
2:12:05	0.1182	545.82	2.20	15455.1	0.0	8640.0	24095.1	2.79	16367.5	7727.5	0.00
2:18:05	0.1236	551.21	2.30	15601.2	0.0	8640.0	24241.2	2.81	16440.6	7800.6	0.00
2:24:06	0.1290	556.83	2.40	15753.7	0.0	8640.0	24393.7	2.82	16516.8	7876.8	0.00
2:30:06	0.1343	561.69	2.50	15883.0	0.0	8640.0	24523.0	2.84	16581.5	7941.5	0.00
2:36:06	0.1397	566.26	2.60	16003.6	0.0	8640.0	24643.6	2.85	16641.8	8001.8	0.00
2:42:06	0.1451	571.22	2.70	16135.4	0.0	8640.0	24775.4	2.87	16707.7	8067.7	0.00
2:48:06	0.1504	576.02	2.80	16262.1	0.0	8640.0	24902.1	2.88	16771.0	8131.0	0.00
2:54:06	0.1558	580.57	2.90	16381.0	0.0	8640.0	25021.0	2.90	16830.5	8190.5	0.00
3:00:07	0.1612	585.05	3.00	16497.7	0.0	8640.0	25137.7	2.91	16888.8	8248.8	0.00
3:06:07	0.1666	589.72	3.10	16619.5	0.0	8640.0	25259.5	2.92	16949.7	8309.7	0.00
3:12:07	0.1719	594.40	3.20	16741.6	0.0	8640.0	25381.6	2.94	17010.8	8370.8	0.00
3:18:07	0.1773	598.25	3.30	16838.5	0.0	8640.0	25478.5	2.95	17059.3	8419.3	0.00
3:24:07	0.1827	602.67	3.40	16952.3	0.0	8640.0	25592.3	2.96	17116.1	8476.1	0.00
3:30:07	0.1881	607.28	3.50	17071.4	0.0	8640.0	25711.4	2.98	17175.7	8535.7	0.00
3:36:08	0.1934	611.16	3.60	17168.6	0.0	8640.0	25808.6	2.99	17224.3	8584.3	0.00
3:42:08	0.1988	614.69	3.70	17255.2	0.0	8640.0	25895.2	3.00	17267.6	8627.6	0.00
3:48:08	0.2042	618.68	3.80	17355.3	0.0	8640.0	25995.3	3.01	17317.6	8677.6	0.00
3:54:08	0.2095	622.96	3.90	17463.5	0.0	8640.0	26103.5	3.02	17371.8	8731.8	0.00
4:00:09	0.2149	626.82	4.00	17558.9	0.0	8640.0	26198.9	3.03	17419.5	8779.5	0.00
4:06:09	0.2203	630.10	4.10	17637.3	0.0	8640.0	26277.3	3.04	17458.7	8818.7	0.00
4:12:09	0.2257	634.29		17742.4	0.0	8640.0	26382.4	3.05	17511.2	8871.2	0.00
4:18:09	0.2310	638.30	4.30	17841.7	0.0	8640.0	26481.7	3.07	17560.9	8920.9	0.00
4:24:09	0.2364	641.72	4.40	17923.5	0.0	8640.0	26563.5	3.07	17601.7	8961.7	0.00
4:30:09	0.2418	645.29	4.50	18009.3	0.0	8640.0	26649.3	3.08	17644.6	9004.6	0.00
4:36:09	0.2471	649.18	4.60	18104.6	0.0	8640.0	26744.6	3.10	17692.3	9052.3	0.00
4:42:09	0.2525	653.26	4.70	18204.8	0.0	8640.0	26844.8	3.11	17742.4	9102.4	0.00
4:48:09	0.2579	656.11		18269.2	0.0	8640.0	26909.2	3.11	17774.6	9134.6	0.00
4:54:09	0.2633	659.82		18358.2		8640.0	26998.2	3.12	17819.1	9179.1	0.00
5:00:09	0.2686	663.44	5.01	18444.7	0.0	8640.0	27084.7	3.13	17862.3	9222.3	0.00
5:15:09	0.2821	670.88	5.26	18612.5	0.0	8640.0	27252.5	3.15	17946.2	9306.2	0.00
5:30:09	0.2955	679.77	5.51	18821.4	0.0	8640.0	27461.4	3.18	18050.7	9410.7	0.00
5:45:09	0.3089	688.01	5.76	19010.3	0.0	8640.0	27650.3	3.20	18145.1	9505.1	0.00
6:00:09	0.3223	695.05	6.01	19162.9	0.0	8640.0	27802.9	3.22	18221.5	9581.5	0.00
6:15:09	0.3358	702.47	6.26	19325.8	0.0	8640.0	27965.8	3.24	18302.9	9662.9	0.00
6:30:09	0.3492	709.78	6.51	19484.0	0.0	8640.0	28124.0	3.26	18382.0	9742.0	0.00
6:45:10	0.3626	715.92	6.76	19607.8	0.0	8640.0	28247.8	3.27	18443.9	9803.9	0.00

Staged Consolidated-Drained Triaxial Compression Test

Client Name URS/ARUP/HMM JV

Clients Project Name California High Speed Train

Clients Project Number 2636-001.0 Boring No. S0065R Sample No. MC08-1

Depth (ft) 36.00

Date Tested 11/26/13

Load Cell 10000 Shear rate (%/min) 0.02 **COMPUTER FILE NAME 13-TXCD-030**

Confining Pressure (psf) 8640

After Consol Initial 5.60 5.37 Height (in) 2.45

2.44 Diameter (in)

Sample	Description	(visual)	Olive sili	v sand
Samue	DESCRIPTION	(vioudi		Ly Salia

Volume (cc)	433.37	412	.27								
					Pore						
			Axial	Deviator	Water				DI	01	
		Load	Strain	Stress	Pressure	Effective	Effective	Effective	Pbar	Qbar	
Elapsed Time	Defl (in)	(lbs)	(%)	(psf)	(psf)	σ_3 (psf)	σ ₁ (psf)	σ_1/σ_3	(psf)	(psf)	Α
7:00:10	0.3760	722.91	7.01	19754.9	0.0	8640.0	28394.9	3.29	18517.4	9877.4	0.00
7:15:10	0.3895	730.00	7.26	19903.7	0.0	8640.0	28543.7	3.30	18591.8	-9951.8	0.00
7:30:10	0.4029	735.77	7.51	20014.0	0.0	8640.0	28654.0	3.32	18647.0	10007.0	0.0
7:45:10	0.4163	741.24	7.76	20114.8	0.0	8640.0	28754.8	3.33	18697.4	10057.4	0.0
8:00:10	0.4298	747.33	8.01	20232.3	0.0	8640.0	28872.3	3.34	18756.1	10116.1	0.0
8:15:10	0.4432	752.62	8.26	20326.3	0.0	8640.0	28966.3	3.35	18803.1	10163.1	0.0
8:30:10	0.4566	757.55	8.51	20409.5	0.0	8640.0	29049.5	3.36	18844.8	10204.8	0.0
8:45:10	0.4700	763.21	8.76	20512.3	0.0	8640.0	29152.3	3.37	18896.2	10256.2	0.0
9:00:10	0.4835	768.05	9.01	20591.5	0.0	8640.0	29231.5	3.38	18935.7	10295.7	0.0
9:15:10	0.4969	772.11	9.26	20647.9	0.0	8640.0	29287.9	3.39	18963.9	10323.9	0.0
9:30:10	0.5103	776.63	9.51	20716.6	0.0	8640.0	29356.6	3.40	18998.3	10358.3	0.0
9:45:10	0.5237	780.55	9.76	20768.2	0.0	8640.0	29408.2	3.40	19024.1	10384.1	0.0
10:00:11	0.5372	784.70		20825.2	0.0	8640.0	29465.2	3.41	19052.6	10412.6	0.0
10:15:11	0.5506	788.98	10.26	20885.2	0.0	8640.0	29525.2	3.42	19082.6	10442.6	0.0
10:30:11	0.5640	793.45		20950.1	0.0	8640.0	29590.1	3.42	19115.1	10475.1	0.0
10:35:11	0.5775	796.13		20965.0	0.0	8640.0	29605.0	3.43	19122.5	10482.5	0.0
11:00:11	0.5909	799.65		21002.5	0.0	8640.0	29642.5	3.43	19141.2	10501.2	0.0
11:15:11	0.6043	803.01	11.26	21034.9	0.0	8640.0	29674.9	3.43	19157.5	10517.5	0.0
11:30:11	0.6177	805.51	11.51	21043.6	0.0	8640.0	29683.6	3.44	19161.8	10521.8	0.0
	0.6312	808.24		21058.0	0.0	8640.0	29698.0	3.44	19169.0	10529.0	0.0
11:45:11	0.6446	810.96		21071.9	0.0	8640.0	29711.9	3.44	19176.0	10536.0	0.0
12:00:11 12:15:11	0.6580	813.48		21080.0	0.0	8640.0	29720.0	3.44	19180.0	10540.0	0.0
	0.6714	816.01	12.51	21087.7	0.0	8640.0	29727.7	3.44	19183.9	10543.9	0.0
12:30:11	0.6849	818.21	12.76	21086.4	0.0	8640.0	29726.4	3.44	19183.2	10543.2	0.0
12:45:12		820.22		21079.7	0.0	8640.0	29719.7	3.44	19179.8	10539.8	0.0
13:00:12	0.6983	822.49		21079.5	0.0	8640.0	29719.5	3.44	19179.8	10539.8	0.0
13:15:12	0.7117			21079.3	0.0	8640.0	29710.2	3.44	19175.1	10535.1	0.0
13:30:12	0.7252	824.43		211070.2	0.0	8640.0	29747.1	3.44	19193.5	10553.5	0.0
13:45:12	0.7386	828.12		211107.1	0.0	8640.0	29750.9	3.44	19195.4	10555.4	0.0
14:00:12	0.7520	830.58			0.0	8640.0	29773.7	3.45	19206.9	10566.9	0.0
14:15:12	0.7654	833.78		21133.7 21127.7	0.0	8640.0	29767.7	3.45	19203.8	10563.8	0.0
14:30:12	0.7789	835.90			0.0	8640.0	29754.8	3.44	19197.4	10557.4	
14:45:12	0.7923	837.77		21114.8		8640.0	29759.2	3.44	19199.6	10559.6	0.0
15:00:12	0.8057	840.31		21119.2		8640.0	29744.6	3.44	19192.3	10552.3	
15:15:12	0.8191	842.14		21104.6			29728.5	3.44	19184.2	10544.2	
15:30:12	0.8326	843.92		21088.5		8640.0			19178.5	10538.5	
15:45:12	0.8460		15.76			8640.0	29717.0	3.44	19178.3	10538.3	_
16:00:12	0.8594	847.09		21045.3		8640.0	29685.3		19135.4	10322.7	
16:15:13	0.8729	847.40				8640.0	29630.8	3.43		10495.4	
16:30:13	0.8863	848.47		20955.3		8640.0	29595.3	3.43	19117.7		_
16:45:13	0.8997		16.76			8640.0	29547.5	3.42	19093.8	10453.8	_
17:00:13	0.9131	848.47				8640.0	29469.8	3.41	19054.9	10414.9	_
17:15:13	0.9266		17.26			8640.0	29473.8	3.41	19056.9	10416.9	
17:30:13	0.9400		17.51			8640.0	29488.6	3.41	19064.3	10424.3	
17:45:13	0.9534	854.57	17.76	20795.6	0.0	8640.0	29435.6	3.41	19037.8	10397.8	10.0

Staged Consolidated-Drained Triaxial Compression Test

Client Name URS/ARUP/HMM JV

Clients Project Name California High Speed Train

Clients Project Number 2636-001.0

Boring No. S0065R Sample No. MC08-1 Depth (ft) 36.00 Date Tested 11/26/13

Load Cell 10000 Shear rate (%/min) 0.02

COMPUTER FILE NAME 13-TXCD-030

Confining Pressure (psf) 8640

 Initial
 After Consol

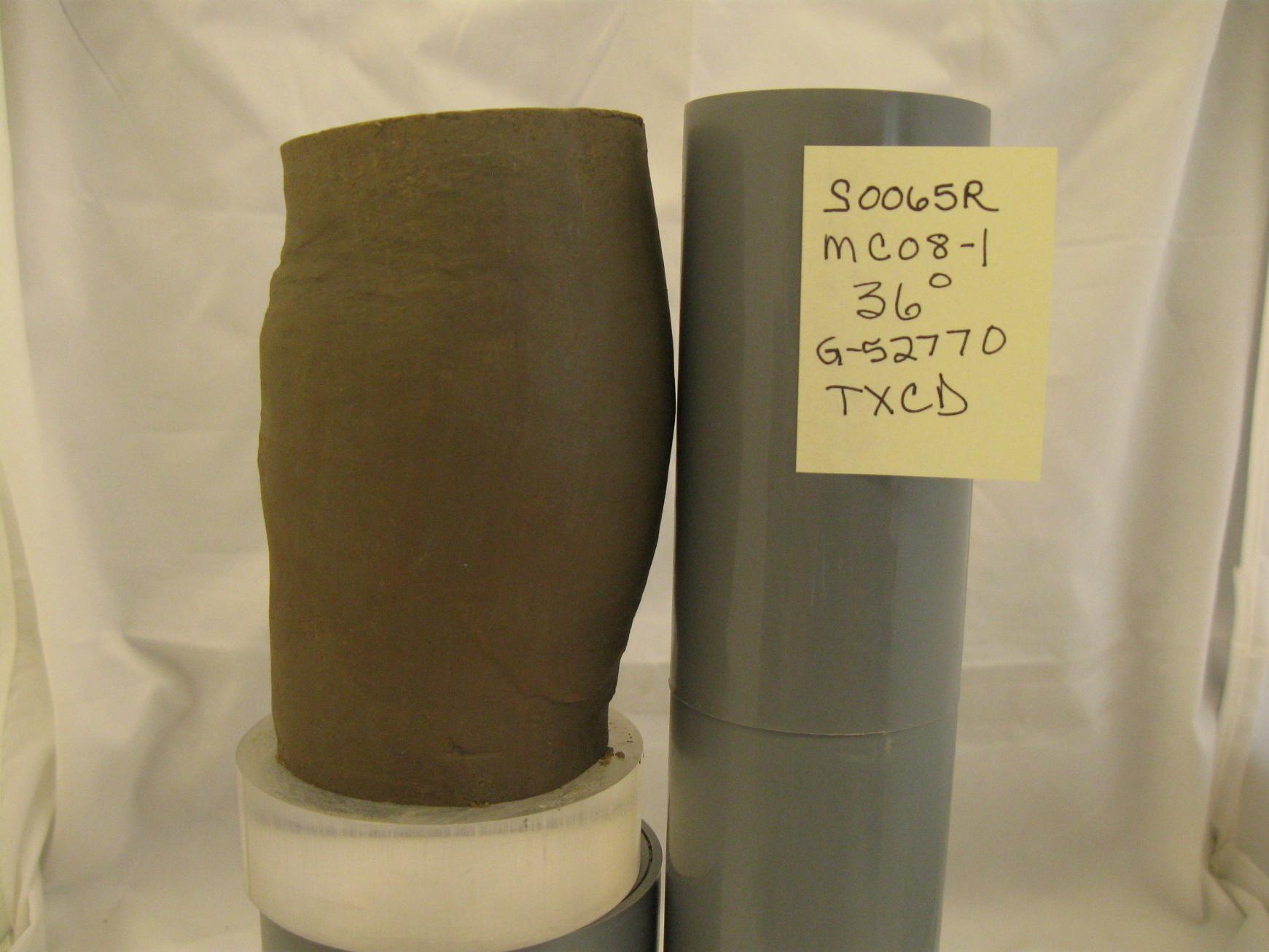
 Height (in)
 5.60
 5.37

 Diameter (in)
 2.45
 2.44

Sample Description (visual) Olive silty sand

Diameter (in) 2.45 2.44 Volume (cc) 433.37 412.27

volume (cc)	433.37	712			Pore						
			Axial	Deviator						01	
		Load	Strain	Stress	Pressure	Effective	Effective	Effective	Pbar	Qbar	
Elapsed Time	Defl (in)	(lbs)	(%)	(psf)	(psf)	σ_3 (psf)	σ₁ (psf)	σ_1/σ_3	(psf)	(psf)	Α
18:00:13	0.9668	854.57	18.01	20732.3	0.0	8640.0	29372.3	3.40	19006.2	10366.2	0.00
18:15:14	0.9803	855.89	18.26	20702.3	0.0	8640.0	29342.3	3.40	18991.1	10351.1	0.00
18:30:12	0.9937	856.48	18.52	20653.5	0.0	8640.0	29293.5	3.39	18966.8	10326.8	0.00
18:45:11	1.0071	855.72	18.77	20571.2	0.0	8640.0	29211.2	3.38	18925.6	10285.6	0.00
19:00:11	1.0206	856.66	19.02	20531.2	0.0	8640.0	29171.2	3.38	18905.6	10265.6	0.00
19:15:11	1.0340	855.00	19.27	20426.6	0.0	8640.0	29066.6	3.36	18853.3	10213.3	0.00
19:30:11	1.0474	852.43	19.52	20299.6	0.0	8640.0	28939.6	3.35	18789.8	10149.8	0.00
19:45:11	1.0608	848.75		20146.0	0.0	8640.0	28786.0	3.33	18713.0	10073.0	0.00
20:00:11	1.0743	845.33		19999.1	0.0	8640.0	28639.1	3.31	18639.5	9999.5	0.00
20:00:15	1.0743	844.99		19990.5	0.0	8640.0	28630.5	3.31	18635.2	9995.2	0.00





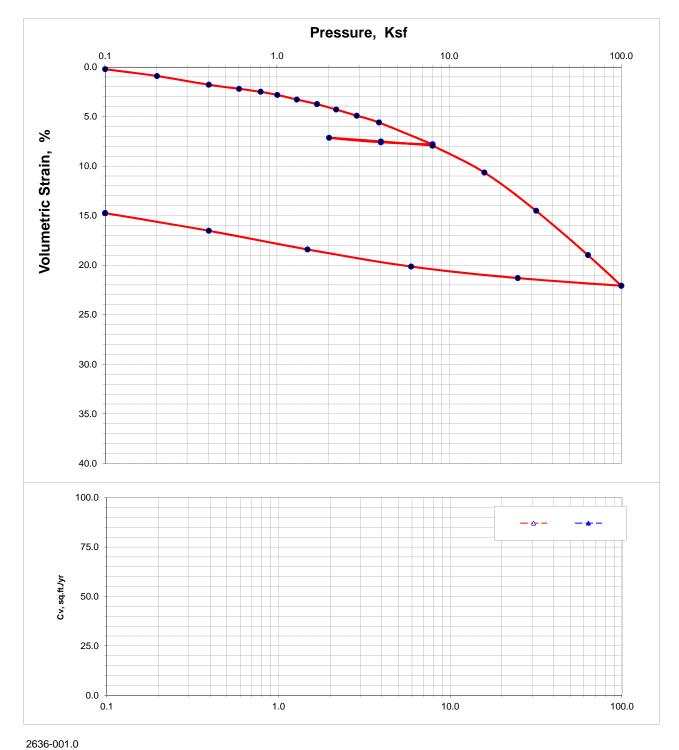






CONSOLIDATION TEST

	Bori	ng Number	S0065R	Samp	ole Number	U10	Depth (ft)	42-44.5			
	Soil	Description	Olive gray s	live gray sandy lean clay							
		Water Content, %	Total Unit Weight, pcf	Void Ratio	Saturation %	Height in	Diameter in	Specific Gravity	Liquid Limit, %	Plasticity Index, %	
Ī	Initial	24.5	121.0	0.735	90.0	1.00		(assumed)			
	Final	17.8	134.3	0.480	100.4	0.853	2.420	2.70	32	19	



Inpsection Services, Inc

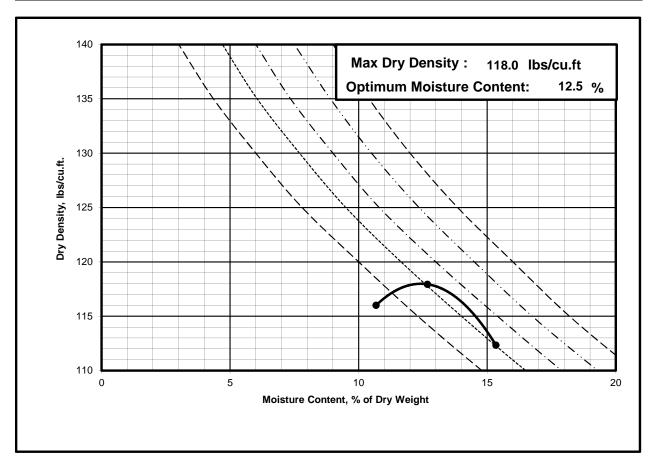


Project Number : 23502-ZS9

: CA HSR FRE_BAK **Project Name**

Date : 11/4/2013 Sample location : S0065R Sample/Curve Number : B01 0'-5' Soil Classification : SM Test Method : 1557B

	1	2	3	4
Weight of Moist Specimen & Mold, gm	3898.1	3966.0	3916.0	
Weight of Compaction Mold, gm	1958.7	1958.7	1958.7	
Weight of Moist Specimen, gm	1939.4	2007.3	1957.3	
Volume of mold, cu. ft.	0.0333	0.0333	0.0333	
Wet Density, lbs/cu.ft.	128.4	132.9	129.6	
Weight of Wet (Moisture) Sample, gm	200.0	200.0	200.0	
Weight of Dry (Moisture)Sample, gm	180.7	177.5	173.4	
Moisture Content, %	10.7	12.7	15.3	
Dry Density, lbs/cu.ft.	116.0	117.9	112.3	





R - VALUE TEST ASTM D - 2844 / CAL 301

Project Number : 23502-ZS9

Project Name : CA HSR FRE_BAK

Date : 11/25/13

Sample Location/Curve Number : Boring S0065R,B-1 @ 0-5'

Soil Classification : SM

TEST	Α	В	С
Percent Moisture @ Compaction, %	17.1	16.6	15.6
Dry Density, lbm/cu.ft.	110.6	111.4	112.9
Exudation Pressure, psi	149	208	309
Expansion Pressure, (Dial Reading)	0.0004	0.0006	0.0019
Expansion Pressure, psf	0.001732	0.002598	0.008227
Resistance Value R	36	43	59

R Value by Expansion Pressure (TI =): 5	(53)
R Value at 300 PSI Exudation Pressure	58

